

Practice C

For use with pages 456–461

Evaluate the exponential expression. Write your answer as a fraction in simplest form.

1. 12^{-2}

2. $(\frac{2}{5})^{-3}$

3. $8^5(8^{-7})$

4. $(-10)^0 \cdot \frac{1}{3^{-3}}$

5. $6^{13} \cdot 6^{-10}$

6. $11^{-2} \cdot 0^{-6}$

7. $21^{-8} \cdot 21^8$

8. $-9 \cdot (-9)^{-3}$

9. $(5^3)^{-1}$

10. $10^{-3} \cdot 20^0$

11. $(-3^{-1})^{-5}$

12. $15^{-5} \cdot 0^9$

Rewrite the expression with positive exponents.

13. $14x^{-5}$

14. $\frac{4}{5^{-2}x^{-7}}$

15. $x^{-10}y^{21}$

16. $20x^{-8}y^{-8}$

17. $\frac{6}{18x^{-3}y^9}$

18. $(-11)^{-2}y^0$

19. $(7^{-2}x^8)^{-2}$

20. $(4x^{-4}y^{-12})^{-5}$

21. $-\frac{48x^{-6}y^8}{52x^9y^2}$

22. $\frac{(8x^3)^{-2}}{2^{-4}x^{-10}}$

23. $\frac{x^{-4}}{(12y^2)^{-2}}$

24. $(\frac{-10x^{-15}}{x^{-15}})^{-5}$

Practice C

For use with pages 450–455

Use the product of powers property to simplify the expression.

1. $x \cdot x \cdot x \cdot x \cdot x$

2. $3^3 \cdot 3^2$

3. $y^7 \cdot y \cdot y^2$

4. $z^9 \cdot z^3 \cdot z^5$

5. $6^4 \cdot 6^6 \cdot 6^1$

6. $t^3 \cdot t^3 \cdot t^3$

Use the power of a product property to simplify the expression.

7. $(4x)^2$

8. $(5x^2)^2$

9. $(2t^2)^3$

10. $(m^2 \cdot n^5)^2$

11. $(-2w^3)^4$

12. $(-3y^2)^3$

Simplify, if possible. Write your answer as a power.

13. $(2)^3(2)^5$

14. $(8^3)^2$

15. $(-2x^2y^3)^2$

16. $(-3a^2c) \cdot (3b^3c^7)^4$

17. $(\frac{1}{2}x)^3$

18. $(-\frac{1}{3}x^4)^2$

19. $(3x^3)^4(\frac{1}{4}x^3)^2$

20. $(4y)^2(-3y^2)^3$

21. $[(9x + 15)^3]^6$

22. $[(-2x^4)^3(-x^8)]^2$

23. $-(a^7b^2) \cdot (a^4b^9)^3$

24. $(r^3s^7t^5)^3(s^2t)^5$

Simplify. Then evaluate the expression when $x = 2$ and $y = 1$.

25. $(x^4y^2)(y^5)$

26. $(-2xy)^3$

27. $(-\frac{2}{3}x)^2(\frac{3}{2}y)^3$

28. $(xy^2)^2(5y^3)$

29. $(2y)^4(3y^2)^2$

30. $(-3x)^3(4y^3)^2$

Practice C

For use with pages 463-469

Use the quotient of powers property to simplify the expression.

1. $\frac{x^8}{x^{15}}$

2. $\frac{(-5)^{14}}{(-5)^{11}}$

3. $\frac{3^3 \cdot 3^9}{3^{17}}$

4. $\frac{x^{-7}}{x^5 \cdot x^{-14}}$

Use the power of a quotient property to simplify the expression.

5. $\left(\frac{3}{7}\right)^{-2}$

6. $\left(\frac{2^4}{x^5}\right)^{-1}$

7. $\left(\frac{x^4}{y^7}\right)^9$

8. $\left(\frac{a^{25}}{b^{14}}\right)^4$

Evaluate the expression. Write your answer as a fraction in simplest form.

9. $\frac{5^{16}}{5^{13}}$

10. $\frac{(-7)^{-3}}{-7^{-5}}$

11. $\frac{10^{-6}}{10^{-10}}$

12. $-\frac{9^{-4} \cdot 9^{-2}}{(9^{-3})^3}$

13. $\frac{4^4 \cdot 4^{-2}}{4^7}$

14. $\left(\frac{3^3}{5}\right)^{-2}$

15. $\left(\frac{36}{4}\right)^2$

16. $\left(-\frac{2}{4}\right)^5$

Simplify the expression. The simplified expression should have no negative exponents.

17. $\frac{6}{x^{10}} \cdot \frac{x^{17}}{15}$

18. $\left(\frac{y^{-5}}{y^9}\right)^{-4}$

19. $\frac{(a^{13} \cdot a^{-8})^5}{a^{31}}$

20. $\left(\frac{11x^6y^{-6}}{x^4y^{-3}}\right)^3$

21. $\left(\frac{2x^{-5}y^{12}}{3x^{-14}y^8}\right)^{-6}$

22. $\frac{(x^{-6})^{-3}}{(x^{-6})^2}$

23. $\frac{-12xy}{7x^4} \cdot \frac{21x^5y^2}{4y}$

24. $\frac{-3x^5}{x^{13}} \cdot \frac{2x^{10}y}{15y^2}$

25. $\frac{4xy^{11}}{x^7y^6} \cdot \frac{6x^8y}{8x^3}$

26. $\frac{y^{10}}{2x^3} \cdot \frac{20x^{14}}{xy^6}$

27. $\frac{5x^{-2}}{3x} \cdot \frac{2y^3}{x^{10}}$

28. $\left(\frac{5xy}{8x^{-1}y^2}\right)^2 \cdot \frac{26y^3}{5x^2y^5}$

29. $\frac{-8x^6y^{-3}}{3x^{-2}y^{-5}} \cdot \frac{-6x^{-10}y}{-4x}$

30. $\frac{4x^{-2}y^{-1}}{3x^{-3}} \cdot \frac{6x^{-3}y^{-2}}{8y^{-7}}$

31. $\left(\frac{2x^2y}{3y}\right) \cdot \left(\frac{4y^3}{x^4}\right)^2$